FlyBy Math™ Alignment
Mathematics Grade Expectations

Standard 7.6: Arithmetic, Number, and Operation Concepts

Grade Expectations	*FlyBy Math*™ Activities
M5: 7 Estimates and evaluates the reasonableness of solutions appropriate to grade level.	--Predict outcomes and explain results of mathematical models and experiments.

Standard 7.7: Geometry and Measurement Concepts

Grade Expectations	*FlyBy Math*™ Activities
M5: 15 Measures and uses units of measures appropriately and consistently, and makes conversions within systems when solving problems across the content strands. (Benchmarks in Appendix B.) M(G&M)-5-7	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
M5: 16 Determines elapsed and accrued time to the nearest minute.	--Calculate and measure the position and time of simulated aircraft. Represent that motion using tables, graphs, equations, and experimentation.
M5: 18 Solves problems using the Cartesian coordinate system (all quadrants) **to** locate coordinates and to represent data from tables.	--Plot points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system to describe the motion of two airplanes. --Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

Standard 7.8: Functions and Algebra Concepts

Grade Expectations	*FlyBy Math*™ Activities
M5: 19 Identifies and extends to specific cases a variety of patterns (linear and nonlinear) represented in models, tables, sequences, or in problem situations; and writes a rule in words or[sc] symbols for finding specific cases of a linear relationship. M(F&A)-5-1	--Represent distance, speed, and time relationships for constant speed cases using tables, bar graphs, line graphs, equations, and a Cartesian coordinate system.

M5: 20 Demonstrates a conceptual understanding of linear relationships ($y = kx$) **as a constant rate of change** by identifying, describing, or comparing situations that represent constant rates of change.	--Represent distance, speed, and time relationships for constant speed cases using linear equations and a Cartesian coordinate system. --Use graphs to compare airspace scenarios for both the same and different starting conditions and the same and different constant (fixed) rates. --Interpret the slope of a line in the context of a distance-rate-time problem.

Standard 7.9: Data, Statistics, and Probability Concepts

Grade Expectations	***FlyBy Math*™ Activities**
M5: 23 Interprets a given representation (tables, bar graphs, circle graphs, or line graphs) to answer questions related to the data, to analyze the data to formulate or justify conclusions, to make predictions, or to solve problems. (IMPORTANT: *Analyzes data consistent with concepts and skills in M5: 24*.) M(DSP)–5–1 And (tally charts, frequency charts, line graphs, Venn diagrams, pictographs, line plots, histograms).	--Use tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.
M5: 25 Identifies or describes representations or elements of representations that best display a given set of data or situation, consistent with the representations required in M5: 23. M(DSP)-5-3 **Organizes and displays data using** line plots, bar graphs, tally charts and frequency charts, or tables to answer questions related to the data, to analyze the data, to formulate or justify conclusions, to make predictions, or to solve problems. (IMPORTANT: *Analyzes data consistent with concepts and skills in M5: 24*.)	--Choose among tables, bar graphs, line graphs, a Cartesian coordinate system, and equations to model aircraft conflicts and predict outcomes. --Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.

M5: 28 In response to a teacher - or student-generated question or hypothesis, collects appropriate data, organizes the data, appropriately displays/represents numerical and/or categorical data, analyzes the data to draw conclusions about the questions or hypothesis being tested, and when appropriate makes predictions, asks new questions, or makes connections to real-world situations. (IMPORTANT: *Analyzes data consistent with concepts and skills in M5: 24*.)	--Conduct simulation and measurement for several aircraft conflict problems. --Represent distance, rate, and time data using tables, line plots, bar graphs, and line graphs. --Use tables, bar graphs, line graphs, equations, and a Cartesian coordinate system to draw conclusions.

Standard 2.5: Mathematical Dimensions, Standard 7.10: Mathematical Problem Solving and Reasoning - Applications

Grade Expectations	***FlyBy Math*™ Activities**
M5: 30 Demonstrate understanding of mathematical problem solving and communication through: • **Approach & Reasoning**—The reasoning, strategies, and skills used to solve the problem; • **Connections**—Demonstration of observations, applications, extensions, and generalizations; • **Solution**—All of the work that was done to solve the problem, including the answer; • **Mathematical Language**—The use of mathematical language in communicating the solution; • **Mathematical Representation**—The use of mathematical representation to communicate the solution; and • **Documentation**—Presentation of the solution.	--Apply mathematics to solving distance, rate, and time problems for aircraft conflict scenarios. --Explain and justify solutions regarding the motion of two airplanes using the results of plotting points on a schematic of a jet route, on a vertical line graph, and on a Cartesian coordinate system.